

**PROCEDURE 12 - Confined Space Entry**

<u>Table of Contents</u>	<u>Page</u>
Synopsis .....	12-ii
Confined Space Entry Checklist .....	12-iii
12 CONFINED SPACE ENTRY .....	12-1
12.1 Purpose and Scope .....	12-1
12.2 Definitions .....	12-1
12.3 Procedure .....	12-2
12.4 Quality Control .....	12-6
12.5 Responsibilities .....	12-7
12.6 References .....	12-8
12.7 Attachments .....	12-8
ATTACHMENT A .....	12-A-1
Confined-Space Entry Permit .....	12-A-1
ATTACHMENT B .....	12-B-1
Permit-Required Confined Space Entry Decision Flowchart .....	12-B-1

## Synopsis

The purpose of this procedure is to provide employees with guidelines concerning hazards associated with entry into and performance of work in confined spaces. This procedure applies to all NWS facilities and work locations which have confined spaces and to NWS employees at these facilities and locations performing confined space entry.

### **Initial Implementation Requirements:**

- **Analyze Site Operations versus Procedure Requirements**
  - Evaluate Confined Spaces. (12.3.1)
  - Conduct Atmospheric Testing. (12.3.5)
- **Develop/Obtain Documentation/Information required for Site**
  - Prepare Listing of Permit-Required Confined Spaces. (12.3.3)
  - Develop Confined Space Entry Permits.(12.3.2)
  - Develop Emergency Response Agreements (ERA) for Emergency Rescue (12.3.21)
- **Designate Person to Administer Confined Space Entry Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Confined Space Training for Designated Site Personnel. (12.3.22)
  - Visitor/Contractor Safety Briefings (12.3.15)
- **Inventory Material/Equipment (Procure as required)**
  - Hand-held Monitors (If applicable).(12.5.2e, 12.3.5)
  - Safety Equipment. (12.5.2e, 12.3.7)
  - Personal Protective Equipment (PPE). (12.5.2e, 12.3.16b)
  - Communication Equipment. (12.5.2e, 12.3.16c)
  - Confined Spaces Postings, Barriers and Warning devices. (12.5.2e, 12.3.8)

### **Recurring and Annual Task Requirements:**

- **Perform Inspection/Assessment/Testing**
  - Re-evaluate confined spaces (12.3.1), as necessary
  - Conduct Atmospheric Testing. (12.3.5)
- **Review/Update Documentation/Information required for Site**
  - Update Listing of permit confined spaces. (12.3.3)
  - Prepare Confined Space Entry Permits.(12.3.2)
  - Maintain ERA for Emergency Rescue (12.2.21)
- **Provide Refresher Training of Site Personnel (If applicable)**
  - Confined Space Training for Designated Site Personnel. (12.3.23)
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Hand-held monitors (12.5.2e, 12.3.5)
  - Safety Equipment. (12.5.2e, 12.3.7)
  - Personal Protective Equipment (PPE). (12.5.2e, 12.3.16b)
  - Communication Equipment. (12.5.2e, 12.3.16c)
  - Confined Spaces Postings, Barriers and Warning devices. (12.5.2e, 12.3.8)

**Confined Space Entry Checklist**

<b>Requirements</b>	<b>EHB 15 Reference</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>	<b>Comments</b>
Is initial and annual review of this procedure conducted and documented?	12.4.2				
Are all confined spaces evaluated using the “Permit-Required Confined Space Entry Decision Flowchart” prior to entry?	12.3.1				
Are appropriate procedures followed after evaluation of all confined spaces to address potential hazards?	12.3.1 & 2				
Are all personnel involved in entry into a confined space, trained?	12.3.22				
Are there written Permits for all Permit Required Confined Entry Space prior to entry?	12.3.2				
Do all Permits contain the required information?	12.3.2 Attachment A				
Have a listing of all permit required confined spaces on site been prepared?	12.3.3				
Is there a signed permit located in a conspicuous location near the permit confined space point of entry?	12.3.4				
Are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substances and explosive concentrations in the confined space before entry?	12.3.5				

Requirements	EHB 15 Reference	YES	NO	N/A	Comments
Is the atmosphere inside the confined space continuously tested or continuously monitored during work?	12.3.6				
Is there an assigned safety observer (attendant) outside of the confined space, when required, whose sole responsibility is to watch the work in progress, sound an alarm if necessary, and render assistance?	12.3.9				
Does the entry supervisor designate in writing on the Permit, the appropriate safety equipment required for entry into a permit confined space?	12.3.7				
Are barriers and warning devices utilized to prohibit potential hazards and unauthorized entries into confined spaces?	12.3.8				
Is the authorized attendant appropriately trained and equipped to handle an emergency?	12.3.17 12.3.10				
Is the authorized attendant prohibited from entering the confined space and trained to summon rescue services in the event of an emergency?	12.3.17f				
Is appropriate Personal Protective Equipment (PPE) required if the atmosphere inside the confined space is not acceptable?	12.3.16b				

## **12      CONFINED SPACE ENTRY**

### **12.1    Purpose and Scope**

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure related to the hazards associated with the entry into and performance of work in confined spaces. This procedure applies to all NWS facilities and work locations which have confined spaces and to NWS employees performing confined space entry.

### **12.2    Definitions**

Attendant. A person assigned to remain on the outside of the confined space and to be in communication with those working inside. A person who is qualified, properly trained, physically and mentally capable and equipped to assist in the rescue of an entrant. This person is sometimes referred to as a standby person or a manway watch.

Authorized Entrant. An employee who is authorized by the employer to enter a permit space.

Confined Space. A tank, vessel, manhole for sewer or electrical access, roof tank, below-ground chamber, vault, pit, open-topped space more than four (4) feet (1.2 m) deep, pipeline, duct, river gauge pit, buoys at the NDBC, sewer or tunnel or other opening that is: (1) large enough and so configured that an employee can enter bodily and perform assigned work (2) having a limited means of egress, (3) not designed for continuous employee occupancy.

Confined Space Entry Permit. A confined space entry permit is an approved document that specifies the date, time, location, type of work to be performed, potential hazards, precautions taken, personal protective equipment required, atmospheric tests performed, length of time the permit is valid and a signed acknowledgment by the entry supervisor, attendant, and entrants.

Entry Supervisor. The person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Isolation. A process whereby the confined space is removed from unwanted forms of energy and completely protected against the inadvertent release of material or energy by the following: blank flange installation, removing sections of lines and piping, electrical lockouts and/or the disconnection of any other energy source or mechanical linkage that could cause personal harm if released unexpectedly.

Lockout/Tagout. The placement of lock/tag on the energy isolating device in accordance with 29 CFR 1910.147 which assures that the energy isolating device will not be inadvertently operated.

Non-Permit Confined Space. A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazards capable of causing death or serious physical harm.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Permit-Required Confined Space. A confined space that requires specific entry procedures. A permit-required confined space is one that meets one or more of the following characteristics: contains or has a potential to contain a hazardous atmosphere; contains a material that has the potential for engulfing an entrant; has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; contains any other recognized serious safety or health hazards.

<p><b>NOTE:</b> Examples of permit-required confined spaces at NWS facilities include electrical and sewer manholes, river gauge pits, and buoys.</p>
---

Point of Entry. Position of entrant whereby the entrant's face breaks the plane of an opening into the confined space. Examples of confined space entrances are hatches, manholes, inspection ports, manways, etc.

RSM. NOAA Regional Safety Manager.

Safety Briefing. Prior to entry, safety instruction will be provided by the Station Manager or his/her designee for visitors and contractors. This instruction will include confined space entry procedure highlights, specific hazards associated with entry and precautions to be taken during entry. The briefing shall also cover the provisions for authorizing a confined space entry performed by a visitor or contractor.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

### 12.3 Procedure

Each potentially confined space shall be initially evaluated using the Attachment B: Permit-Required Confined Space Entry Decision Flowchart.

- 12.3.1 Non-Permit Required Confined Space Entry. Once the space is determined to be a non-permit confined space and appropriate actions are taken to control any hazards that may be present, the entry into that space can be authorized.

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards for entrants, the space shall be re-evaluated and, if necessary, reclassified as a permit-required confined space.

**NOTE:** It should be noted that the majority of confined spaces at NWS facilities are non-permit required confined spaces.

- 12.3.2 Permit Required Confined Space Entry. A permit-required confined space is one that meets one or more of the following characteristics:
- a. Contains or has a potential to contain a hazardous atmosphere.
  - b. Contains a material that has the potential for engulfing an entrant.
  - c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
  - d. Contains any other recognized serious safety or health hazards.

The permit shall specify the date, time, location, type of work to be performed, potential hazards, atmospheric tests performed, personal protective equipment required, precautions taken, names of visitors or contractors, availability of rescue devices, and it shall certify that all necessary protective measures have been taken to ensure the safety of each worker. The authorized permit shall be:

- (1) Completed, signed and authorized by the Station Manager and entry supervisor.
- (2) Signed by persons entering the permit confined space.
- (3) Signed by the attendant.

- 12.3.3 A listing of all permit-required confined spaces shall be maintained on site by the Safety or Environmental/Safety Focal Point.
- 12.3.4 The signed permit shall be located in a conspicuous location near the permit- confined space point of entry.
- 12.3.5 Prior to entry into a permit-confined space, the atmosphere shall be tested with remote or hand-held monitors for oxygen content, combustible and toxic atmospheres, in that order.

- 12.3.6 While work is being performed in the permit-confined space, continuous monitoring shall be conducted to ensure a safe atmosphere. If at any time the alarm is activated, personnel inside the permit confined space shall evacuate immediately.
- 12.3.7 Safety equipment required for entry into a permit-confined space shall be designated in writing on the permit by the entry supervisor.
- 12.3.8 Entry personnel shall post signs at the point of entry to notify employees of the hazards that may be present and ensure that all barriers, warning devices, and associated materials are utilized to prohibit inadvertent or unauthorized entries.
- 12.3.9 An attendant shall be assigned to remain on the outside of the permit-confined space and be in constant contact (visual, audible or radio) with the workers inside. Rescue procedures shall be pre-planned and practiced prior to permit confined space entry.
- 12.3.10 The attendant shall have the capability to summon help at all times.
- 12.3.11 When all of the above steps have been taken, the entry supervisor shall permit the work to proceed.
- 12.3.12 In the event of an unauthorized entry, the attendant shall order authorized entrants to evacuate the permit-confined space and notify the entry supervisor for resolution.
- 12.3.13 Upon completion of the work inside the permit confined space, the associated maintenance equipment shall be removed and the permit-confined space prepared for service.
- 12.3.14 Upon completion of all work inside the permit confined space, the entry supervisor shall cancel and sign the confined space entry permit.
- 12.3.15 A visitor or contractor may enter a permit confined space if supported and accompanied, if physically possible, by in-house trained personnel and he/she has received a confined space safety briefing from the entry supervisor prior to entry. Verification of this training shall be in writing to acknowledge that the visitor or contractor is named as an authorized entrant in the confined space permit.
- 12.3.16 Authorized Entrant's Duties:
  - a. Know space hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.
  - b. Use appropriate personal protective equipment properly (e.g., face and eye protection, and other forms of barrier protection such as gloves, aprons, and coveralls) when applicable.
  - c. As necessary, maintain communication (i.e., telephone, radio, visual observation) with attendants to enable the attendant to monitor the entrant's status as well as to alert the entrant to evacuate.

- d. Exit from permit-confined space as soon as possible when ordered by an authorized person, when the entrant recognizes the warning signs or symptoms of exposure exist, when a prohibited condition exists, or when an automatic alarm is activated.
- e. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.
- f. Read and sign the confined space entry permit prior to start of work.

**12.3.17 Attendant's Duties:**

- a. Perform no other duties that interfere with the attendant's primary duties.
- b. Remain outside permit-confined space during entry operations unless relieved by another authorized attendant.
- c. Know existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences of the exposure, and their physiological effects.
- d. Maintain communication with and keep an accurate account of those workers entering the permit confined space.
- e. Order evacuation of the permit-confined space when a prohibited condition exists, when a worker shows signs of physiological effects of hazardous exposure, when an emergency outside the confined space exists, or when the attendant cannot effectively and safely perform required duties.
- f. Summon rescue and other services during an emergency.
- g. Ensure that unauthorized persons stay away from permit confined spaces or exit immediately if they have entered the permit space.
- h. Inform authorized entrants and entry supervisor of entry by unauthorized persons.
- i. In the event of the incapacitation of the authorized entrant, NWS attendants will not enter the permit-confined space. Rescue shall be performed in accordance with paragraph 12.3.21.

**12.3.18 Entry Supervisor's Duties:**

- a. Know space hazards including information on the mode of exposure, signs, or symptoms and consequences of exposure.
- b. Verify emergency plans and specified entry conditions such as permits, tests, procedures, and equipment before allowing entry.
- c. Terminate entry and cancel permits when entry operations are completed or if a new condition exists.

- d. Take appropriate measures to remove unauthorized entrants.
- e. Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.

12.3.19 A “qualified person” who has the education, training, and experience working in/with confined spaces shall make the determination as to whether a confined space is permit-required.

**NOTE:** *Proper application of the decision flow chart in Attachment B would facilitate compliance with this requirement.*

12.3.20 If the workplace contains permit confined spaces, the Safety or Environmental/Safety Focal Point in conjunction with Regional or Operating Unit Environmental/Safety Coordinator and NOAA Regional Safety Manager (RSM) shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces. Signs stating “DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” shall be used.

12.3.21 Emergency rescue from permit-required confined spaces shall be performed by local emergency response organizations. Emergency Response Agreements with these organizations are highly recommended. NWS personnel shall not perform emergency confined space rescue.

12.3.22 Before initial work assignment begins, the Station Manager shall ensure that proper training for all workers who are required to work in permit confined spaces. Upon completing this training, employees must have understanding, knowledge, and skills necessary for the safe performance of their duties. The Station Manager shall certify that training has been accomplished. The training shall include the duties of the Entrant, Attendant, and Entry Supervisor as specified in sections 12.3.16 -12.3.18.

12.3.23 Additional training is required when:

- a. The job duties change.
- b. There is a change in the permit-confined space program or the permit confined space operation presents a new hazard.
- c. When an employee's confined-space entry job performance shows deficiencies.

12.3.24 Upon completion of training, employees must receive a certificate of training that includes the employee's name, signature or initials of trainer(s), and dates of training.

## 12.4 Quality Control

### 12.4.1 Regional or Operating Unit Environmental/Safety Coordinators

- a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.
- b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

### 12.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

### 12.4.3 NWS Headquarters (NWSH)

- a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.
- b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.
- c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

## 12.5 Responsibilities

### 12.5.1 Regional or Operating Unit Environmental/Safety Coordinators\*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

### 12.5.2 Station Manager\*

- a. Shall have oversight over the implementation of this procedure and shall ensure that the requirements of this procedure are followed by individuals at the NWS facility.
- b. Shall ensure confined-space entry supervisors, attendants and entrants receive appropriate training.
- c. Shall designate the safety equipment required for entry in writing on the permit.
- d. Shall provide a briefing to visitors before they enter a confined space.

- e. Shall ensure that initial and periodic inventory of hand-held monitors, PPE, communication equipment, confined spaces postings, barriers and warning devices is accomplished and adequate stock is maintained.

12.5.3 Safety or Environmental/Safety Focal Point\*

- a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.
- b. Shall maintain a listing of all permit-required confined spaces located within the facility.

12.5.4 Employees

- a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.
- b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

<p><b>NOTE:</b>    * - Reference WSOM Chapter A-45 for complete list of responsibilities.</p>
---

## 12.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

- 12.6.1 American National Standards Institute, ANSI Z117.1-1989, "Safety Requirements for Confined Spaces".
- 12.6.2 National Institute for Occupational Safety and Health, NIOSH Alert Request for Assistance in Preventing Occupational Fatalities in Confined Spaces, (1986).
- 12.6.3 National Institute for Occupational Safety and Health, NIOSH Criteria for a Recommended Standard Working in Confined Spaces, November 1979.
- 12.6.4 National Institute for Occupational Safety and Health, NIOSH A Guide to Safety in Confined Spaces, July 1987.
- 12.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.146, Permit Required Confined Spaces, and 1910.252, Welding Cutting and Brazing.
- 12.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout).

**12.7 Attachments**

Attachment A. Confined Space Entry Permit

Attachment B. Permit-Required Confined Space Entry Decision Flowchart



## ATTACHMENT A

**Confined-Space Entry Permit****PART 1** (To be completed by the supervisor)

Location and Description of Work \_\_\_\_\_  
 \_\_\_\_\_

Permit Date \_\_\_\_\_ (Permit is valid for one day only)

Visitors or Contractors (Print name and organization)  
 \_\_\_\_\_  
 \_\_\_\_\_

**POTENTIAL HAZARDS** (Check those which are applicable and comment)

Potential Hazards	<input checked="" type="checkbox"/>	Comments
Corrosive Materials		
Hot Equipment		
Flammable Materials		
Toxic Materials		
Inert Gases		
Flame/Spark-Producing Operations		
Electrical Shock		
Stored Energy		
Moving Machinery		
Spilled Liquids		
Pressurized Systems		
Other		

Protective Measures Necessary to Control Hazards \_\_\_\_\_  
 \_\_\_\_\_

Special Work Permit Needed (If necessary attach it to the confined space permit)

Yes \_\_\_\_\_ No \_\_\_\_\_

**PERSONAL SAFETY EQUIPMENT** (Check those that are applicable and comment)

Eye Protection		
Head Protection		
Hand Protection		
Foot Protection		
Protective Clothing		
Respiratory Protection		
Recovery Device		
Retrieval Lines and Harness		
Supplemental Lighting		
Communication Equipment		(Entrants _____ Security _____)
Auxiliary Ventilation		
Atmospheric Monitoring Equipment		
Other		

	Printed Name	Signature	Date
Standby Person	_____	_____	_____
Entrants	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

Employees have received the required training in accordance with this procedure.

**RESPONSIBLE SUPERVISOR** \_\_\_\_\_

(Signature)

\_\_\_\_\_

**PART 2** (To be completed by the Station Manager or Immediate Supervisor)

**ATMOSPHERIC TESTS**

		<u>Acceptable</u>	
	Location	Range	Reading
Flammable Gas %	_____	<u>&lt; 20% LEL</u>	_____
Oxygen Content	_____	<u>19.5% - 23.5%</u>	_____
Other _____	_____	_____	_____
(Specify)		(Specify)	

**TEST PERFORMED BY** (Print Name) \_\_\_\_\_  
 (Signature) \_\_\_\_\_  
 (Date) \_\_\_\_\_

Contractor Able to Perform Work Without an Escort? Yes \_\_\_\_ No \_\_\_\_

REMARKS \_\_\_\_\_

If visitors or contractors are involved, the appropriate safety briefing has been given.

(Print Name) \_\_\_\_\_  
 (Signature) \_\_\_\_\_  
 (Date) \_\_\_\_\_

**PART 3 PERMIT CANCELLATION** (To be completed by supervisor)

All authorized work has been completed and the confined space permit is canceled.

RESPONSIBLE SUPERVISOR (Signature) \_\_\_\_\_  
 (Date) \_\_\_\_\_  
 (Time) \_\_\_\_\_

**RETURN THE PERMIT TO THE STATION MANAGER UPON COMPLETION**

**EMERGENCY PHONE NUMBER** \_\_\_\_\_



ATTACHMENT B

Permit-Required Confined Space Entry Decision Flowchart

APPENDIX A TO 1910.146 – PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART

